

OURAY NWR
NARRATIVE REPORT - 1967



COVER PICTURE

An aerial view of Leota Bottom from the northeast, looking straight down the Main Drain Canal. The settling pond for the pump can be seen opposite the wooded island in the right half of the picture. The Green River winds its torturous way through the refuge. With this photo and a little imagination, the observer can easily form a mental "after" shot of Ouray's habitat development. Johnson Bottom, in the foreground along the river, flooded; and below Leota, Wyasket, and then Sheppard, and then Wood Bottoms — all with water.

Looks good, doesn't it!

NARRATIVE REPORT

OURAY NATIONAL WILDLIFE REFUGE

January 1, 1967 to December 31, 1967

Personnel

H. J. Johnson,Refuge Manager
Clyde E. Nicely.Assistant Refuge Manager
Mrs. Norma A. Miracle.Clerk Typist
Lewis A. LittletonMaintenanceman
Harold H. Dudley..Farm Laborer (Temporary)
Clarence Earl Moore.Farm Laborer (Temporary)
Dennis K. JensenLaborer (Temporary)
Ronald J. PhillipsHeavy Duty Mechanic (Temporary)
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PHOTOGRAPHS AND NR REPORTS

OURAY NATIONAL WILDLIFE REFUGE

UINTAH COUNTY, UTAH

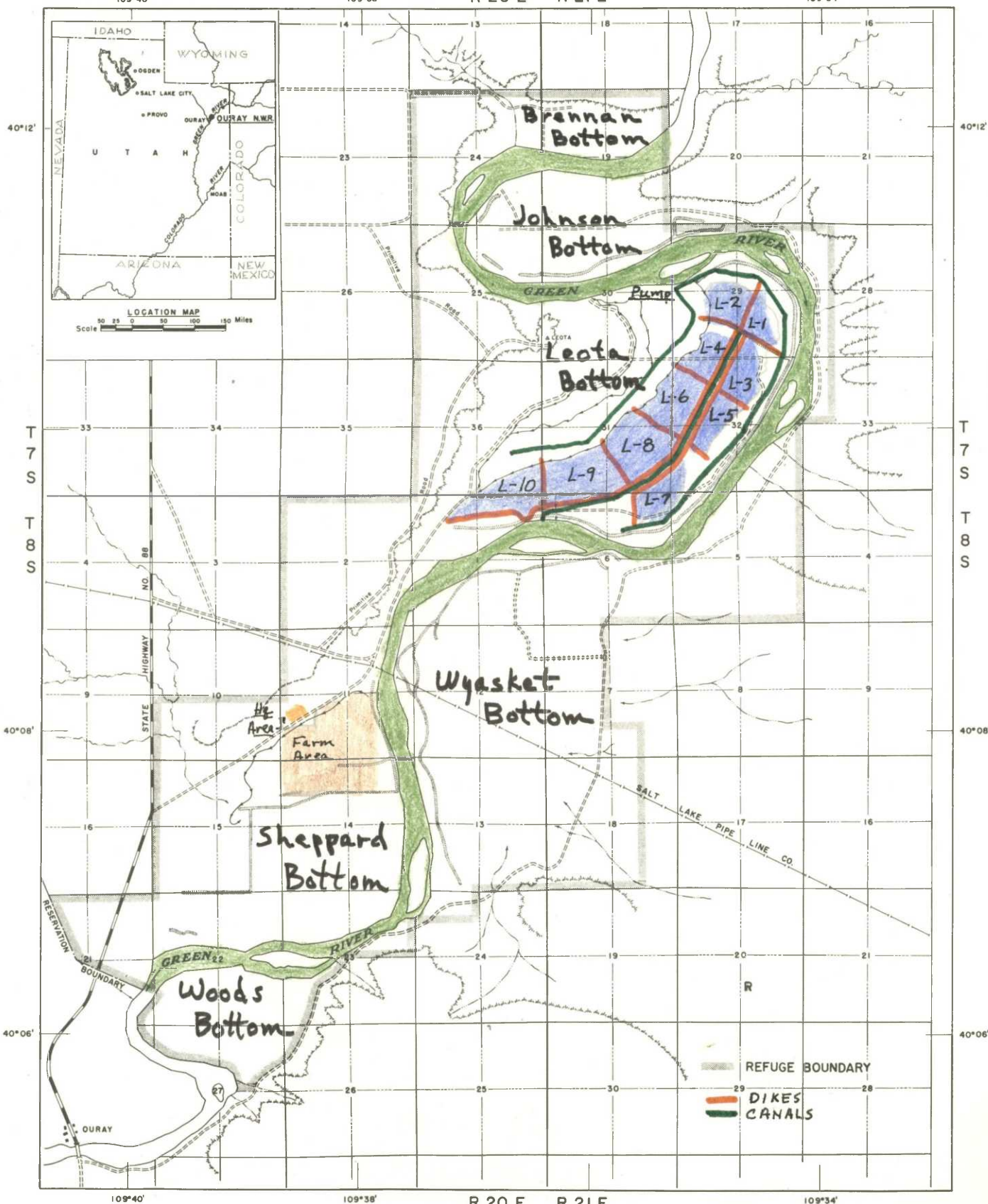
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

UNITED STATES
DEPARTMENT OF THE INTERIOR
109°40'

109°38'

R 20 E R 21 E

109°34'



COMPILED IN THE BRANCH OF ENGINEERING
FROM B.L.M. SURVEYS, AERIAL PHOTOGRAPHS
AND SURVEYS BY B.S.F. & W.
REVISED OCT. 1962

ALBUQUERQUE, NEW MEXICO

JANUARY 1960

SALT LAKE MERIDIAN

Scale 0 20 40 60 80 100 120 140 160 CHAINS
0 1/4 1/2 3/4 1 MILES



TOWNSHIP
DIAGRAM

TRUE NORTH
MAGNETIC N
MEAN DECLINATION
1960

2R UTAH 543 406

NARRATIVE REPORT

OURAY NATIONAL WILDLIFE REFUGE JANUARY 1, 1967 TO DECEMBER 31, 1967

I. GENERAL

A. Weather Conditions.

The weather information in the table below was recorded at the U. S. Weather Bureau station located at refuge headquarters:

	Temperatures				Precipitation		
	Av.	<u>Max.</u> (Ext.)	Av.	<u>Min.</u> (Ext.)	This Month	Av.	Snowfall
January	23	(41)	-16	(-26)	.37	.41	5.5"
February	30	(43)	- 1	(-15)	T	.36	T
March	56	(71)	23	(5)	.39	.40	1.0
April	64	(74)	27	(11)	.11	.60	T
May	75	(92)	39	(23)	1.07	.70	
June	80	(97)	47	(36)	1.47	.71	
July	94	(100)	55	(44)	.18	.52	
August	93	(97)	52	(46)	.07	.73	
September	82	(94)	43	(32)	.58	.61	
October	70	(83)	27	(12)	.09	.61	
November	53	(69)	20	(4)	.44	.38	3.0
December	23	(39)	- 5	(-20)	.76	.28	13.0
					Totals:		
Extremes:		(100)		(-26)	5.53	6.31	22.5"

The winter of 1966-67 was a hard one. Snow fell in early December, 1966 and remained, with additions, until early March. This snow crusted heavily, creating hardships for both wildlife and livestock. Minimum temperatures for this two and a half month period were consistently sub-zero and daytime maximums were, in the main, below freezing. The spring thaw started in late February and by March 4 all snow had melted.

The refuge came into 1967 with seven inches of snow on the ground and, with the '67 additions, had good early spring moisture. However, late spring showers failed to materialize. Instead the wind blew -- and blew -- and blew almost daily through March, April and on into May. This wind sapped the ground and plants of moisture and there was little precipitation to replace it. In late May and early June, something unusual occurred -- almost daily rain showers for a period of three weeks, which deposited almost half the year's precipitation accumulation. Little rain fell in July and August, and daytime temperatures were generally in the 90's.

Fall was pleasant with Indian Summer weather extending on through October into November. September and November had some good storms, but October was dry. Of the sixteen inches of snow that fell in November and December, nine inches remained on the ground at year's end. The first below freezing reading of the fall was recorded on October 7.

B. Habitat Conditions

1. Water

Spring breakup of ice on the river came during the week of March 6-10. Stockmen opening waterholes in the ice for livestock had reported thicknesses of more than twenty inches and there was concern that breakup might bring on ice jams that have caused flooding in the past. However, the ice in the center of the river, over swifter water, proved to generally be no more than six inches thick and the river opened without causing problems.

Ice in the Leota impoundments reached thicknesses of twelve inches. It all melted by March 18, taking with it only one water gage, that in Unit 4.

There had been some concern over just how much water could be held in the Leota units over the winter. The porous soil, plus evaporative losses, caused rather high losses during summer and fall (first water was pumped into these units July 6, 1966). The following table shows the water fluctuations from November, 1966 (the end of the pumping season due to the change in electrical rates for irrigation purposes) until December 5 (the last reading taken before the units froze over), and from December 5 to March 15 (first reading taken prior to spring pumping).

Table 1.

Leota Units	Pump Shut Off		Before Freeze Up		After Breakup	
	Nov. 1	(Diff.)	Dec. 5	(Diff.)	March 15	Total Diff.
L-1	3.32	(-.50)	2.82	(-.22)	2.60	(-.77)
L-2	2.80	(-.34)	1.96	(-.24)	1.72	(-1.08)
L-3	2.96	(-.40)	2.56	(-.26)	2.30	(-.66)
L-4	4.26	(-.72)	3.54	(Gage taken out by ice action.)		
L-5	2.32	(-.26)	2.06	(-.06)	2.00	(-.32)
L-6	3.36	(-.18)	3.18	(+.14)	3.32	(-.04)
L-7	1.00	(+.06)	1.06	(+.10)	1.16	(+.16)
L-8	1.36	(-.10)	1.26	(+.10)	1.36	(0)
L-9	1.76	(-.14)	1.64	(+.06)	1.70	(-.08)

During the period November 1 to December 5, 0.45 inches of moisture was recorded at headquarters, and from December 5 to March 15, 1.56 inches was measured. All units but one, Unit L-7, lost water before they froze over. However, from freezeup to breakup the water losses in the upper units were slight and the four lowest units actually made small gains. The water levels held by these units over winter is important in management planning, since spring breakup usually coincides so closely with the start of the nesting season in this area. The less water that must be pumped early in the spring, the better.

The Leota pump was started on March 20, after some difficulty due to a 24-inch cap of ice in the pump sump. Work on L-10 Dike was finished in late December, 1966 and so Unit L-10 was filled, completing the Leota Bottom development.

Using a discharge table for rectangular weirs, an attempt was made to measure the Leota pump output and the water loss in the two supply canals. The highest pump output measured (at the two settling pond outlet structures) was 16.3 c.f.s. There was no appreciable water loss in the West Canal. The gradient or "fall" in the East Canal is so slight that its flow could not be measured by this method. This gentle gradient, plus the sandy soil through which it runs, leads to high water loss in this canal (it is estimated to be as much as half the flow). However, some other method will have to be found to measure it.

While the original Leota Bottom development is considered to be complete, there is still much work to be done there. The condition of the pump inlet structure on the river continues to deteriorate (see picture section).

The concrete drop structures in Units L-4, L-6, L-8 and L-9, which washed out when the pump was first turned on in 1966, have not yet been rebuilt, although some of them continue to be used with "stopgap" repairs. A bid was circulated during the year for renovation of the pump inlet structure and repairs to the damaged drop structures. However, the only two bids received were refused because each was more than double the engineer's estimate of \$20,000. At year's end, plans for future repairs to these structures were still unknown. The condition of this structure could prove critical to management of the Bottom next year. If unusable, water control, in what is now the only "controlled" refuge management area, will have been lost.

Flood waters of the Green River the last week in May sent water over the top of the Leota intake structure, and some

repairs to the river dike in lower Leota were made to protect the lower units and the drain canal. Wood Bottom flooded again this year and the river almost raised enough to overflow into Johnson Bottom. Only Mother Nature's timing of local storms prevented the flooding of Sheppard Bottom. The flow of the Duchesne River, which empties into Green River about two miles below the refuge, has a pronounced effect on river levels within the refuge. High water in the Duchesne creates a "plug" where it enters the Green and this serves to "back up" water upstream. The White River, which comes out of Colorado and empties into Green River just below the mouth of the Duchesne, also has an effect. This year, prolonged cold on its watershed kept the Duchesne river down while the Green was at its fullest. A raise in the Green of one or two feet would have put water in Sheppard Bottom -- high water in the Duchesne could have made that difference.

The Leota pump was shut off on November 1 with all the units up to optimum levels. The units were all frozen solid by December 4 and the river was carrying slush ice. At year's end all water on the refuge was frozen over except for several "leads" in the river ice, a couple of them being over a half mile in length. The river was abnormally high at the end of the year. Flaming Gorge Dam is releasing water to help fill Lake Powell downstream. As a result the ice is within a foot of the top of the Leota pump inlet structure, increasing fears for the already weakened structure. The high water has caused some reverse "subbing" in Leota, producing live water above the ice in spots and generally raising the level of all the units.

2. Food and Cover.

As mentioned earlier, there was good early spring moisture from last winter's accumulation of snow. This snow melted slowly and the water soaked into the ground, there was little runoff. However, the strong, almost daily winds in March, April and May sucked this moisture out of the soil, hurting production of natural foods in the area. The plants are generally adapted for the conditions and have low moisture requirements, but this year the timing of the precipitation was against them.

In mid-March thirty acres of corn was shredded down for spring migrant waterfowl and as an attraction to entice nesting birds. Earlier in the winter ten acres had been mowed to provide food for the overwintering waterfowl. Resident Mallards had stripped the ears as high as they could reach, consuming approximately 40% of the total crop before the drifters returned from the sunny climes.

There were abundant small grains for the birds this year. In 1966, 36.5 acres were planted to fall wheat. This matured in '67 to produce an excellent crop. One representative acre combined to provide seed for this fall's planting yielded 65 bushels. In addition, a cooperative farmer planted 16 acres of barley, 12 acres of oats and four acres of millet. Of this, all the barley and eight acres of oats were harvested. The stubble of the harvested grain and the eight acres of oats and millet mown and left in the field were heavily utilized by waterfowl and pheasants.

So much food was available that when the first snow fell it had been necessary to cut only 21.5 acres of wheat for the fall migrants, and there were still 15 acres left standing. The variety of wheat planted (See Section III, B, 4) is stiff stemmed and has a very firm seed head; the plants were not weighted down by the snow, but rather it settled around them leaving the seed heads exposed. Overwintering waterfowl now land in the field and feed on grain above the snow.

Starting May 20, 38 acres were planted to corn and a bumper crop was produced. Many stalks made two ears, but most had three or four. Strong October winds broke many of the brittle, heavily laden stalks and laid them on the ground. Though none of the corn was mowed for the birds, ducks and even geese landed in the wind-opened fields as the snow covered most of the small grains.

Natural aquatic foods were also abundant this year. Wood Bottom again produced an excellent growth of Smartweed (Polygonum coccineum). However, once again, as flood waters receded, much of this highly desirable waterfowl food was left "high and dry" and thus unutilized. Much of this valuable food source will continue to be wasted until the water levels in Wood Bottom can be controlled by pumping.

Leota Bottom, in its first full growing season since being filled, had excellent growths of aquatics. Smartweed, Wild millet (Echinochloa spp.) and Pondweed (Potamogeton nodosus), (also sometimes listed as P. americanus), were widespread and produced excellent seed crops. Good growths of Sago pondweed (Potamogeton pectinatus) were found in Units L-1, L-2, and L-4. These aquatics were heavily utilized by waterfowl. Greatly increased use-day figures for such species as Gadwall, Widgeon, and Pintail were almost certainly due to the greater abundance of natural aquatics, attracting birds that formerly used Pelican Lake. The 3,402 Whistling Swan use-days were a direct result of this abundance.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl.

A flock of Mallards and Canada Geese spent the winter of 1966-67 on the refuge. Through January and February, the number of Mallards stayed constant at about 800, but the geese slowly increased from 150 at the first of the year to 310 in late February. These birds stayed around open leads in the river ice and fed in the Sheppard Bottom corn fields.

The first week in March brought the first of the spring migrants: 30 Widgeon, 275 Pintail, 50 Green-winged teal, six Redheads, and nine American mergansers. By March 18, all ice was gone from the river and the Leota units. On March 23, the highest population count for the spring was made: 213 Canada geese, 9,856 ducks of twelve species (including 6,552 Mallards, and 2,400 Pintail), and 400 Coot.

Nesting was up this year over last. Water was available in Leota Bottom for the first full nesting season. Geese began pairing and going through mating displays in late February and early March. The first goose nest, one with five eggs, was found on March 30 in Wood Bottom. In all, 16 goose nests were located, eight in Sheppard Bottom, seven in Leota, and one in Wood Bottom. Nest destruction was very high on the nests located: four had been destroyed when found, and four more were subsequently destroyed. This was very discouraging indeed; however, due to the wider availability of water this year, nesting was more dispersed than in the past and there was still an estimated production of 70 goslings. The first goose brood of three goslings was observed in Leota Bottom on May 3. A predator control program was started late in the nesting season, really too late to be significantly helpful. Profiting from the mistakes of last year, an early start is planned in predator reduction this next year.

Duck production was also up, with approximately 400 ducklings being raised. Gadwall numbers were greatest with 150, then Mallards - 80, Pintail - 60, Blue-winged teal - 50, Shoveler - 40, Green-winged teal - 15, and last but certainly not least, a brood of five Ruddy. Nesting was concentrated in Leota Bottom, though broods were seen in Wood and Sheppard Bottoms. The highest count of breeding pairs in Leota was 148: 60 Gadwall, 15 Blue-winged teal, 14 Pintail, 13 Shoveler, nine Mallard, nine Cinnamon teal, eight Widgeon, seven Redhead, six Scaup, five Ruddy, and one Green-winged teal. Here again,

predators (primarily skunk, raccoon, badger and magpie) had a definite effect on success of nesting. The extent of the predator problem wasn't realized in time to take significant action.

There was no definite "peak" in the fall migration, but rather three high points. From the low summer population the birds slowly built up until, on September 21, there were 450 Canada Geese and 7,450 ducks of ten species. Then numbers declined — on October 19 no geese were found (they had not quit the area entirely, merely moved off the refuge for a short period) and only 3,070 ducks. Again there was a buildup and on November 16, 368 geese and 9,135 ducks were seen. Duck numbers dropped to 5,665 (5,000 Mallards) by the last of November. As all water in the area (but the river) froze the first of December, the refuge waterfowl picture actually improved, with numbers rising to 543 geese and 10,000 Mallards, all of them feeding in our farm fields.

Swans made their biggest showing thus far in refuge history. The first five were seen in Leota on October 16. Their numbers soon built up to 100; most of them stayed until the ice literally froze up beneath them, the last 33 leaving on December 4. There were approximately .80 juveniles per adult in this flock.

The increase in waterfowl use days in 1967 was quite dramatic (see Table 2). The expanded water area available, this being the first full year since completion of the Leota units, and the presence of larger numbers of overwintering birds were probably the main contributing factors to this jump. As more habitat is provided and as natural aquatic food production increases, greater numbers can be expected.

The last week of the year saw 297 Canada Geese and 4,000 Mallards taking advantage of refuge hospitality. The availability of open water in the river, and of wheat and corn in the Sheppard Bottom fields, was attractive enough to keep these birds from taking the long flight south. Some of them will doubtless remain all winter.

Table 2.

WATERFOWL USE DAYS

1963, 1964, 1965, 1966, 1967

	<u>January-April</u>			<u>May-August</u>			<u>September-December</u>			<u>Totals</u>		
	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>
1967 -	0	18,977	254,505	0	12,754	170,184	3,402	44,856	727,496	3,402	76,587	1,152,185
1966 -	84	16,093	34,426	0	9,335	29,647	91	24,587	322,757	175	50,015	386,830
1965 -	0	10,252	33,059	0	12,684	42,511	294	30,982	290,437	294	53,918	366,007
1964 -	0	1,169	70,658	0	574	11,753	0	6,185	126,110	0	7,928	208,521
1963 -	0	504	21,623	0	952	9,429	0	8,610	211,517	0	10,066	242,569

2. Cranes.

The first flight of northbound Sandhill Cranes was right on time this year, 200 of them alighted on the refuge on March 21. They found the Leota units to their liking and lingered longer on the ground than they have in the past. The largest number at any one time was about 250. Migration lasted for about a week, with several flights of these very musical birds passing through. Spring would hardly seem complete without hearing their calls.

In the fall, only one flock of cranes was seen to light on the refuge—a group of 100 on October 13.

3. Mourning Doves.

The first doves of the year were noted on April 23. A peak was reached in late August when an estimated 4,000 birds were on the refuge. There was some dove hunting along the refuge's west boundary and some incidents of trespass by hunters. Since it is quite easy to stray over onto the refuge in this unfenced portion, only warnings were issued. There is a possibility that the refuge may in the future be open for dove hunting.

4. Other Waterbirds.

The first shorebirds seen were ten Killdeer in Leota on March 9. The shorelines and mudflats surrounding water areas in Leota and Wood Bottoms were very attractive to the water, marsh and shorebirds; likewise to the gulls and terns. An impressive number of different species were observed this year: Pied-billed grebe, Eared grebe, Western grebe, Great Blue heron, Snowy egret, Black-crowned Night heron, Glossy ibis, American Bittern, Common Loon, Long-billed Curlew, Spotted sandpiper, Western willet, Yellow-legs, Long-billed Dowitcher, Marbled godwit, Avocet, Black-necked stilt, Wilson's phalarope, California gull, Ring-billed gull, Franklin's gull, Bonaparte's gull, Forster's tern, Black tern, and Black-bellied plover. Killdeer, Avocet and Eared grebe are known to have nested this year, and the destroyed nest of what was thought to be an American bittern was found in bulrushes in Leota's Unit L-7. On June 13 a rather unlikely bird, a Common gallinule, was seen in the Leota Main Drain Canal.

One lonesome, forlorn-looking Killdeer was seen in Leota on December 21. From whence he came and where he went is not known, but all those acres of solidified water could not have been too inviting -- he left.

A bird list of 133 species, plus five accidentals, was compiled and submitted for publication. Additions will doubtless be made, especially regarding songbirds, but even at present it represents a respectable list for this area. It is hoped that it will soon be printed and made available to refuge visitors.

B. Upland Game Birds.

1. Ring-necked Pheasant.

Pheasants apparently came through the winter of 1966-67 in good shape. The pheasant crow count made in March and April indicated a population of approximately 800 birds, with a sex ratio of one male to 2.5 females. Based on this population check and brood counts, an estimated 418 young were produced.

For the first time since the refuge was established, the area (excluding Leota Bottom) was opened for hunting of pheasants this season. The fat, unwary old cocks received a sometimes fatal lesson in the wild first half-hour of the season — never trust a human. See the Public Relations section for results of this hunt.

2. Other Game Birds.

There were no sightings this year of Chukar Partridge, Sage Grouse, or California Quail. Two grouse and six quail were seen as recently as 1966, but there is some doubt whether these birds made it through the long, hard winter. Only small numbers of any of these birds have ever been seen on the refuge.

C. Big Game Animals.

1. Mule Deer.

At the beginning of the year an estimated 50 deer were using the refuge area. These numbers increased on into spring and summer as animals moved to the river for food and as fawns were born. The months of July and August saw a general movement away from the river as the deer apparently sought higher, drier places to get away from the mosquitoes, which were particularly plentiful and troublesome this year. In September and even into October, as deer season approached, the refuge deer population was low, with probably no more than 75 animals. In mid-October there was a noticable influx back into the refuge. See the Public Relations section for results of the deer hunts.

2. Antelope.

Again this year there were no observations of antelope on refuge lands. The busy oilwell activity east of the refuge

in the Wanset oil field has changed the movement patterns of these animals and perhaps moved them out of the area completely.

D. Fur Animals, Predators, Rodents and Other Mammals.

The beaver is the only fur animal of any significance at this time. It has been refuge policy to allow trapping of beaver in the river as long as this activity does not interfere with waterfowl use of the river. This year a trapper took 39 animals, almost all of them in the stretch of river from the north boundary to the upper end of Sheppard Bottom. Records of sex were not kept at first, but of the last 19 caught, there were 13 males and six females.

Muskrats appeared in the Leota units. It is now common to see them swimming alongside the dikes, and their dwellings can be seen mounded up in the marshy areas around the units. The dikes themselves are so porous that dike damage, if any, may have gone unnoticed.

As mentioned earlier, predators destroyed a number of bird nests. Striped skunks, Badger, Raccoon and Magpies were definitely indentified as offenders. Bobcat are also present on the area and doubtless prey on adult birds, though as yet haven't been tied in with any nest destruction.

In May a number of poisoned (strychnine) chicken eggs were put out around the goose pond and farm fields in Sheppard Bottom, and around Units L-1 and L-3 in Leota. While several of these eggs were taken, no carcasses could be found and the program was discontinued. In November, Maintenceman Littleton set out steel traps that netted three Bobcat, two skunk, one badger, and one raccoon in Leota, and one badger in Sheppard. Five more skunks and a badger fell as "targets of opportunity" to .22's during the year. Early in the year poisoned suet was put out in bait stations to control magpies; however, most of the birds left the river during the harsh winter for better "pickings" around feed lots and dump grounds, so probably no more than 50 were killed with the poison.

On the evening of December 8 a sound often connected with the West, but unheard here lately, the yipping and calling of a pack of coyotes, was added to the chorus of geese feeding in the Sheppard Bottom fields. The "little dogs" were never seen, but this, if anything, added to their attraction. What is there about such an incident that adds spice to an evening and sets it apart from all the other evenings of the year? Probably not just the observer's fondness for coyote calls or merely the rarity of the sound, but maybe rather the

enjoyment of a touch of wildness, the appreciation of an ample excuse for the indulging of imagination. How many people go away from our refuges each year with just such an "evening to remember?" Probably, hopefully, more than we realize. The glimpse of a Bobcat (for that's usually all it is), seeing a stately old mossback of a buck, encountering a curious and as yet unwary fawn, all these things and more can provide enjoyment. We sometimes lose sight of this. We shouldn't.

On December 4, another seldom seen animal made an appearance in Sheppard Bottom. A mountain lion passed through the farm fields just below the houses and was seen by two people. The big cats have been observed here before, but usually several years pass between sightings.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies.

The more commonly seen birds were Bald eagles, Golden eagles, Red-tailed hawks, Marsh hawks, American Rough-legged hawks, Sparrow hawks, and Great Horned owls. On June 29, an Osprey was seen in Sheppard Bottom. On September 15, a Peregrine was observed harassing ducks in Leota Bottom, a most impressive display of speed and flying skill. The power of that bird is amazing.

Comparatively few eagles were seen this year. On January 11 a Bald and a Golden eagle were noted in Sheppard Bottom. Then in February, six Bald eagles stayed for a while. In March, six Golden eagles used the refuge for a short period. In late July, two Bald eagles stayed in Leota for about two weeks, one of them was once frightened away from the meal he was making of a Gadwall. The next eagle sightings weren't until November when two Golden and a Bald were seen in Sheppard. In early December a Golden was seen feasting on a Mallard in one of the Sheppard grain fields, and a Bald eagle was watched on December 8 as he harassed the ducks and geese feeding in Sheppard.

Magpies were numerous during the spring and summer, but were scarce the other seasons. At the end of the year there were certainly no more than 50 scattered up and down the river.

F. Other Birds.

It seemed unusual to have Meadowlarks on the refuge in December, with snow covering the landscape. With grain and open water readily available, some of these birds remained in Sheppard long after they would normally have flown south.

G. Fish.

At some time in the spring the flap gates on the Leota Bottom drain canal were open, for soon after high water a number of large Carp showed up in the canal. Great Blue herons fished there all summer. Then, in the first week in November, the Leota pump was shut down for the winter and as the water drained out of the East Feeder Canal about 40 small (half-pound) Carp were trapped in the canal. Since fish of this size could not possibly pass through the pump screen, they must have swam "upstream" from one of the units into the canal. So, there are probably Carp in the Leota units; whether they will become a problem or not remains to be seen.

H. Reptiles.

The usual bull and garter snakes, "horned toads" and lizards.

I. Disease.

None to report.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Contracts.

Contract No. 14-16-C002-3087, which called for gravelling the tops of the travelled dikes and riprapping the unit sides of the dikes with gravel, was started on February 6. The contractor, Robbins Construction Company of Duchesne, Utah, got a later start than had been anticipated and the spring thaw almost caught the work uncompleted. The job had to be done in winter when the dikes were frozen, since the porous, spongy structures will not support heavy equipment at any other time of year.

A total of 21,996 cubic yards of pit-run grade material was excavated from a Leota Bottom gravel pit and placed on the dikes, with a final completion cost of \$21,336.12. The contractor had up-to-date equipment and the work went fairly smoothly, though it was hampered by the bitter cold which was hard on men and machines alike. One near disaster did occur when the contractor "confusedly" drove an almost new D-6 bulldozer out onto the ice covered main drain canal. The ice gave way, dumping Cat and operator into four-foot deep water (and ice cubes!). The dozer was submersed for over two hours and most of the time only the exhaust and back seat were above water. However, the engine never died and finally, with the help of another dozer and by using the hydraulic blade to break up the surrounding ice, he was able to work the machine out of the canal! The dozer

apparently received little damage from the ordeal, but for the contractor, who spent much of that two hours in waist deep ice water, it was a sobering experience.

The riprapping was completed just in time to prevent severe erosion damage to the dikes. As mentioned earlier, spring brought high winds. These winds lashed the dikes with waves and would undoubtedly have caused much damage had the dike faces been unprotected.

2. Equipment and Facilities.

The bare bones of the new service building were filled out a bit by building six work benches, two tool boards, a parts bin and a fire tool rack. The benches are 32 inches in height with two and three foot wide tops that will eventually be covered with sheet metal. The benches, which line the walls of the two large work stalls, have shelves beneath them for extra storage space. These shelves are enclosed with sliding plywood doors.

A radio communications system for Ouray and Browns Park was installed this year. The network with assigned frequencies of 171.75 and 172.45 megacycles, includes base stations at the office in Vernal, in the Ouray service building, and in the Assistant Manager's quarters in Browns Park. In addition, there is a relay tower on Blue Mountain (in Utah, east of Vernal), a remote unit in Quarters 56 at Ouray, and six mobile units (four at Ouray, two at Browns Park). One frequency activates the relay tower, making communications possible over a wide area; the other can be used for local transmissions, without going through the tower. The system, General Electric and largely transistorized, has proven very successful in providing communication on, between and to the Vernal office for these two widely separated refuges. The remote unit in Q-56 also serves to reduce the isolation for Browns Park families, putting them in touch with a telephone in case of emergencies during off duty hours.

A Model 75 Link Belt Speeder Dragline was transferred from the National Elk Refuge. Repairs are being made to this machine with hopes of using it in habitat development work.

An excess Kristi KT-2 Snow Cat, a four-passenger tracked model with enclosed cab, was transferred in at the first of the year and has proven useful.

The temporary shop which served faithfully, if inadequately, since the start of the refuge, was moved. This 12x12 foot prefab Armco building was set on a new foundation in the service building yard for use as an oil house. The storage shed was dismantled and salvaged.

3. Earthwork, Ditching and Roadwork.

When the new Leota impoundment, Unit 10, was filled in the spring, part of the road which connects with the West Protective Dike was covered by water. This section of road was realigned, moving it closed to the bluffline.

The spillway of the Sheppard Protective Dike was enlarged, using a farm tractor and two-yard Everman scraper. Fill from this cut was used to increase the height of, and dress, the dike and roadway. Additional material from a nearby pit was used to complete the dressing.

Negotiations with the Ouray Park Irrigation Company are continuing in an effort to find a way to connect the refuge with the company's ditches. The refuge has 300 "shares" in this irrigation company, but has realized little benefit from them thus far. Finances have kept the company from extending the ditch to the refuge. When the refuge is connected with the ditch network, the water can be stored behind the entrance road water control dike or passed on through it into Sheppard Bottom.

An effort was made in Wood Bottom to channel future runoff water into the low point or "sump" of the bottom. This sump is subject to flooding during the spring runoff. As mentioned earlier, it flooded again this year from Green River. The bare clay bluffs which border the bottom on the east shed practically all the moisture that falls on them. Our motor grader was used to cut two ditches, one on either side of the sump, in order to trap this runoff and take it down into the low portion of the bottom. These ditches have yet to be tested.

An experiment was conducted this year, using asphalt to pave "low water crossings" in the roads instead of placing culverts under the roadway. Open seams of an asphalt-bearing sand are found in this area. Uintah County maintains a pit near Vernal where they load the material for \$2.50 a cubic yard. Two four-yard dump trucks were rented from GSA and 48 yards of the asphalt were hauled to the refuge. Two "dips" in the road to Leota Bottom were paved, using a motor grader to spread and tamp the sticky material.

4. Water Development.

Dike work for Unit 10 in Leota Bottom was completed in December, 1966, and the unit filled by pumping this spring. This was the last unit scheduled for Leota. After aforementioned repairs to the pump and West Canal drop structures are made, perhaps development of remaining refuge waterfowl habitat can be undertaken.

5. Pothole Development.

One factor apparent in Leota Bottom, our only developed waterfowl habitat, is the large area of water surface in comparison to shoreline or "edge." Only "one side" of each unit, or the periphery of the units as a whole, have much potential for nesting. (See map and cover photo.) An attempt was made this year to break up this shoreline.

Explosives were used to blast potholes in four units. Nitro-carbo-nitrate was the blasting agent used to make 53 potholes: 15 in Unit L-1, six in Unit L-3, 19 in Unit L-4, and 13 in Unit L-5.

Since no "experts" in the use of ammonium nitrate or in this type of blasting were readily available, quite a bit of experimenting was done. Some of the "experiments" made serviceable potholes, others just showed us what we did wrong. The factors that varied were the amount of explosive used, the depth at which the charge was placed, the amount and type of compaction over the charge, and the spacing of holes for multiple-shot blasts to produce large potholes. One-half stick of 60% dynamite was found to be sufficient for setting off a charge, and electric blasting caps were used to detonate the dynamite. Shots of up to twelve holes were tried, arranging them in a circular pattern which made a large pothole with a "goose nesting island" in the center.

Several members of the refuge crew had used dynamite and ditching powder, but none of them had experience with ammonium nitrate. Work proceeded slowly and with caution as refuge "powder monkeys" learned about the characteristics of this explosive. As the saying goes, there are "old" powder monkeys and "bold" powder monkeys, but no "old-bold" ones. Some lessons came the hard way. For example, ammonium nitrate becomes virtually inert when it gets wet. About the second day of work on the project a nine-hole, circular patterned shot was touched off -- and four of the charges failed to explode. Crewmen, one man at a time, dug up the charges like a porcupine makes love -- you know, v-e-e-e-ry carefully. There was little chagrin, mostly just relief, to find that the dynamite had detonated, but water seeping through the ammonium nitrate had deactivated it. As a result of this, a better container was found for the charges. A heavy gauge plastic tubing, which could be cut to any desired length and tied off at both ends, proved to be the answer.

It was decided that the large-multiple-hole shots, while producing picturesque results, did not benefit enough to justify the additional expense in time and material used.

Most of the potholes were made with a single charge. A more or less standard procedure was worked out for the blasting. A hole four feet deep was bored with a 12-inch tractor mounted posthole auger. This hole was deepened and finished out with a hand auger to a depth of six feet (where the consistency of the subsoil permitted). The charge was then measured out and placed in its waterproof container, with the dynamite inserted down into the ammonium nitrate. The hole was tamped firmly with earth, the long blasting cap lead wires were affixed to a 750-foot length of blasting cable, and the shot was fired. At all times safety, rather than speed was stressed.

No one size charge was found to be effective under all conditions. Charges of 30, 40, and 50 pounds of the explosive produced similar sized holes under different conditions. Most of the shots were in the 40-50 pound range. Again, there was little uniformity in the size of the potholes, even with a uniform charge. Holes generally ranged from 20-30 feet in diameter and five to eight feet in depth, with a V- or U-shaped profile. Moist, saturated ground yielded better holes than dry, powdery soil. In some areas, a substrata of gravel prevented any blasting at all. No hard and fast rules could be made, since each site and soil caused variations. Experience was the best teacher.

In Unit L-4, water distribution ditches were cut to each pothole. In the other units, the high water table was allowed to fill the holes. Comparisons of nesting in these pothole areas to that in other units will be made in coming nesting seasons to determine the technique's effectiveness as a management tool for Ouray Refuge. We feel that the Link Belt dragline would be a very effective and relatively inexpensive tool for this type development in the future.

6. Fencing.

There was the usual maintenance and repairs to the fence around the farm fields. Three-quarters of a mile of new fence was built by grazing permittees between grazing units G-2 and G-3 in Wyasket Bottom.

B. Plantings.

1. Marsh and Aquatic Plantings.

Bulrush (*Scirpus* sp.) plants were transplanted by Youth Opportunity Corps (YOC) boys as one of their summer work projects. A dense growth of bulrushes in Unit L-7 was used as the source. The plants, dug up in bunches of 4 - 10 stems with rootstock attached, were transferred by truck and boat

to the other Leota units. The plants were pushed down into the mud approximately ten feet apart in two alternating rows parallel with the dikes in 6-18 inches of water.

The first efforts were made to get the plants established on the south and west sides of the dikes, where their growth would serve as additional protection against wave erosion. Then, as time allowed, they were transplanted to other areas. As the plants spread they will also offer nesting sites for over-water nesting birds. The plants, transplanted in late July, made additional growth during the summer. Most of them grew several new stems and seemed to be well established.

2. Trees and Shrubs.
None.

3. Upland Herbaceous Plants.

In mid-April, Leota dikes were seeded with grass and clover. The winter's gravelling and riprapping contract had cleared the dikes of most accumulated vegetation, leaving the opportunity for trying to establish these more desirable plants. Seeding rate in pounds/acre of dike surface was: 5# Kentucky Blue Grass, 2# Crested Wheat Grass, 2# Intermediate Wheat Grass, 1# Canary Reed Grass, $\frac{1}{2}$ # Sodar Wheat Grass, 2# Alsike Clover, and 3# Strawberry Clover. Both varieties of clover were also scattered in the wet, spongy areas around Unit L-9 and the Main Drain Canal. Sodar Wheat Grass, a drought resistant variety often used along highway right-of-ways, was also seeded along the East Protective Dike. Canary Reed Grass and Strawberry Clover were planted on nesting islands in Units L-6 and L-10.

Due to the dryness of spring, it was necessary to irrigate the dikes to start germination. A high pressure 2½-inch pump was used on a 600-foot sprinkler irrigation system (see picture section). Rains in late May and early June helped out and good germination was achieved. Moisture in the porous dikes was within 2-6 inches of the surface, leaving little distance for seedling roots to travel. The grasses and clovers got a good start. However, they were in competition with some very vigorous weeds and in some cases were in quite alkaline soils. It will take a couple of growing seasons to measure their success.

4. Cultivated Crops.

A total of 90 acres was planted this year to various grains: 38 acres of corn, 20 acres of fall wheat, 16 acres of barley, 12 acres of oats, and four acres of millet. Refuge crews planted the wheat and corn, the remaining 32 acres were put

in by a cooperative farmer. The refuge shared in the cooperative agreement on a 50-50 basis. The barley and millet fields were also seeded with a pasture mix of 100 pounds Kentucky Blue Grass, 40# Intermediate Wheat Grass, 25# Brome Grass, 30# Alsike Clover, and 25# Strawberry Clover for the combined twenty acres.

As mentioned earlier, the corn crop was very good. Bad alkali spots of about six acres reduced the yield to approximately 100 bushels per acre for the entire crop. The barley, oats and millet were beset by weeds, forcing the cooperative farmer to windrow his share before combining it. The 20 acres of pasture got an excellent start, providing some fine green browse in the fall after the grain was harvested or mowed.

The 36.5 acres of fall wheat planted in 1966 produced a fine crop. The variety used, Gaines (Blue Tag), was a first for the refuge. With its shorter stem and tight, firm seed head, it proved an excellent variety for our needs. Many a pheasant hunter and his dog tramped through the wheat, but the seed heads did not shatter and shell out. The shorter stem meant less chaff to remove from the field. Yield was good also, one acre harvested for seed for fall planting brought 65 bushels.

All these crops got good utilization. Waterfowl, pheasants, deer, and other small mammals and birds, found Sheppard Bottom a "horn of plenty" this year. Besides the refuge crops mowed for them, the birds found much feed in the stubble left by the co-op farmer. At year's end, 300 geese and 4,000 ducks were still feeding in the corn and 15 acres of wheat that protruded above the snow.

C. Collections and Receipts.

1. Seed or Other Propagules.

One acre of fall wheat (65 bushels) was harvested to provide seed for fall planting.

2. Specimen.

In May, Phil Summers and Larry Peterson, Fisheries Services Biologists from Vernal, collected approximately thirty Carp on the refuge as part of a pesticide study. The fish, one from the Main Drain Canal and the rest in flood waters behind L-10 Dike, were taken with electric shocking gear.

D. Control of Vegetation.

1. Mechanical.

Part of the YOC summer work project was cattail control. Cattail was noted this year in the Leota impoundments for

the first time. The plants, newly sprouted and scattered, were pulled by hand before they could produce mature seed. This involved a lot of walking and searching for the scattered clumps; also such occupational hazards as "cotton picker's back," sunburn, and webbed feet. It is hoped that these early preventive measures will give the bulrush a chance to get established before cattail completely dominates the shallow impoundments. Two acres of cattail near the old goose pond were mowed before seed matured.

In the fall, Leota dikes and roadsides were mowed with the roto-cutter mower to remove the dry vegetation. Kochia, Sunflower, Russian Thistle, and Cocklebur are the major offenders in the seemingly endless fight. It is hoped that the plantings on the dikes will successfully compete and replace the undesirables with something more palatable to the waterfowl.

E. Planned Burning.

An attempt was made in the fall to burn dead vegetation on the Leota Dikes in order to destroy the seed crop and reduce next year's competition with the grasses and clover. The plants still contained too much moisture to burn well. Burning was not successful. Spring burning is out of the question because of its effect on nesting.

F. Fires.

There was only one refuge fire this year. It started off the refuge. At noon on April 28, the VISTA worker in Ouray village was burning trash in an open barrel near her house while a 50 m.p.h. wind was blowing. Some sparks or burning trash blew into dry Cheat Grass nearby and the race was on. Local residents attacked the fire almost immediately with hand tools, but the high southerly wind quickly fanned it out of their control. At about 12:45 refuge personnel saw the smoke and investigated. By this time the wind was rapidly spreading the fire across the bottomland above Ouray toward the refuge and the BIA and Ute Tribe had started to dispatch fire fighters to the scene.

No direct action on the fire was possible -- it was burning too furiously ahead of that wind. The refuge's bulldozer and motor grader were rushed to a point ahead of the fire to cut a fire break. Once on the refuge, the fire hit the area burned over in March and April, 1966. The scarcity of fuel there and the fact that the wind had abated, slowed the fire's forward progress long enough for the firebreak to be completed. At 4:00 p.m. the fire jumped the line near the river, but was controlled. The fire wasn't declared "out" until May 4, at which time it had burned 130 acres of refuge land and 365 acres on the reservation.

Chalk one up for the War on Poverty.

IV. RESOURCE MANAGEMENT

A. Grazing.

The following table lists all grazing permits in effect this year.

<u>Permittee</u>	<u>AUM's</u>	<u>Acres Grazed</u>	<u>Location</u>	<u>Effective Date</u>
Gale G. Wilkins (Permit OUR-9-66)	450 (65 cattle and 4 horses)	3,665	Units G-1, G-2 and G-6.	9/15/66 to 2/28/67
LaRue Pickup (Permit OUR-12-67).	210 on an on-and- off basis	2,320	Unit G-3	10/1/67 to 3/31/68
Gale G. Wilkins (Permit OUR-13-67)	300	3,665	Units G-1, G-2, and G-6	11/1/67 to 3/31/68
Indian Trail Ranch, Richard E. Dooley (Permit OUR-14-67)	165 (Inter- mittant basis)	3,000	Unit G-5A	12/1/67 to 1/1/68

Trespass cattle continue to be a big headache. The refuge's boundary is unfenced, and there are grazing leases on the BLM land adjoining the refuge. The cattle naturally prefer the more lush grazing in the refuge bottomland to the desert range BLM ground. The permit issued to the Indian Trail Ranch was for some of these trespass cattle, the chief offenders. If you can't keep them off, make them pay their fare!

B. Haying.

One permit for the taking of alfalfa hay from 12 acres in Sheppard Bottom was issued to Gale G. Wilkins. Under this permit, OUR-12-67, 26.0 tons of hay were removed in two cuttings.

C. Fur Harvest.

As mentioned earlier, 39 Beaver were taken on the river by one trapper. The river itself is under State control and the trapping on it is administered by the Utah Fish and Game Commission.

D. Timber Removal.

Some cottonwood timber was cut under a Special Use Permit issued in 1964 to Ivan Anderson. Timber was removed from a river island off Wyasket Bottom and from lower Sheppard Bottom. The cottonwood was paid for in 1964 on the basis of scaled footage.

E. Commercial Fishing.
None.

- F. Other Uses.
Permission was granted by the Bureau for Gulf Oil Corporation to locate two more water wells in upper Wyasket Bottom. In 1966 Gulf put in three wells and a pipeline to carry the water to the Wanset oil field east of the refuge. This year, 17 test holes were drilled. The two holes with best water were selected and will be developed next year. This year, Gulf put effective mufflers on the big motors at the three existing wells, eliminating much of the noise which before could be heard over most of the refuge.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

None.

VI. PUBLIC RELATIONS

- A. Recreational Uses.
By far the greatest use of Ouray this year was for hunting. The refuge was open for archery and regular deer seasons, and for pheasant hunting. These three seasons brought approximately 555 people to the area in August - November. An estimated 50 people fished the river in the summer months. Another 210 came merely to drive and see what they could see, or for conducted tours. There were 70 campers during the year, but they were here in connection with either the deer or pheasant hunting and were not counted separately.

The refuge has no development, as such, for visitors. There are no restrooms, specified tour roads or picnicking and camping facilities. The gravelling of the Leota Dike did make it safer and more convenient for visitors to make that circle and view our developed habitat. The refuge location has started to appear on the new road maps and several tourists we talked to had found the refuge in this way. One couple had noted mention of the refuge in Laycock's Sign of the Flying Goose, and stopped by while on vacation. Also, some have first visited the area for hunting and later brought their families back for an outing. Visitors and their incumbant problems will doubtless increase with the years.

- B. Refuge Visitors.
Visitors to the Vernal office and/or refuge:

Al Neimeyer

1/20

Game Management Agent
Richfield, Utah
Duck Predation

Anthony J. Opstedal	1/24	Const. Mgmt. Engineer, R.O. Construction Conference
Terry E. Anderson	2/8	Wildlife Services Courtesy
Bob Scott Carl Johnson	2/28	River Basin Studies Salt Lake City, Utah Tribal Waterfowl Project
Harold M. Boeker	2/28	Wildlife Biologist, R.O. Tribal Waterfowl Project
LeRoy W. Giles	3/22	Biologist, River Basin Studies, Meeting of T.A.P.
Terry E. Anderson	3/22	Wildlife Services Meeting of T.A.P.
Rodney A. Smith	3/22	U. S. Geological Survey Courtesy
Scott Passey T. B. Hutchings Woodrow Nielson Lorin Hunt	4/4	Soil Conservation Service Soil Survey
J. Austin Beard	4/14	Realty, R.O. Purchase Negotiations
Rollin G. Hornbuckle	4/19	Realty, R.O. Appraisals
Anthony J. Opstedal	4/25	Engineering, R.O. Construction Inspection
Charles Bostick	4/25-30	Engineering, R.O. Survey Sheppard Bottom
Harold M. Boeker	4/28	Wildlife Biologist, R.O. Game Range Survey Uintah & Ouray Reservation
Al Valverde Charles Daniels	5/9	BIA, Ft. Duchesne, Utah Bighorn Sheep Problems
Mayo W. Call	5/9	BLM, Salt Lake City, Utah Bighorn Sheep Problems
David W. Kimbrell	5/11	Realty, R.O. Courtesy

Dr. Paul Stringham	5/16	Member, Utah Game Commission Vernal, Utah
William O. Nelson	5/16	Assistant Regional Director Albuquerque, New Mexico Courtesy
Bob Thoeson	5/16	Fish Hatcheries, R.O. Courtesy
Art Hughlett	6/10-12	Chief, Branch of Operations Div. Wildlife Refuges, W.O. Inspection Tour
Jim Harmon	6/10-12	Asst. Refuges Supervisor Div. Wildlife Refuges, R.O. Inspection Tour
Jim Harmon	6/19-21	Asst. Refuges Supervisor Div. Wildlife Refuges, R.O. Refuge Development
Bill Godby	6/19-21	Engineering, R.O. Refuge Development
Marc Nelson	7/19	Refuges Supervisor, R.O. Inspection
Jim Harmon	8/8-10	Asst. Refuges Supervisor Div. Wildlife Refuges, R.O. Leota Bottom Development
H. A. Hager	8/8-10	Structural Engineer, R.O. Leota Bottom Development
George Bekeris	8/9	Chief Appraiser, BSF&WL, W.O. Refuge Tour
Raymond St. John	8/9	Realty, R.O. Refuge Tour
David Kimbrell	8/9	Realty, R.O. Refuge Tour
J. Austin Beard	8/10	Realty, R.O. Land Purchase
Charles Bostick	9/6-13	Engineering, R.O. Survey Sheppard Bottom

Henry B. Edgar	9/11	Engineering, R.O. Water Hearing
Gerald B. Gill	10/18	Former Assistant Manager at Ouray, now w/Park Service. His official comment on reason for visit: "Quiet my homesickness."
Maurice Baker	10/26	Div. Wildlife Research Provo, Utah Courtesy
Herman Brunchez	10/27	Appraiser, BIA Land Purchase

C. Refuge Participation.

On March 22, Manager Johnson and Assistant Nicely, assisted by personnel from Wildlife Services, Fisheries Services, and River Basin Studies, gave a program on the organization and functions of the BSF&WL at a meeting of the Technical Action Panel in Vernal. This T.A.P. consists of representatives from local offices of Federal, State, County, and City governments.

On June 30, sixty summer school students from West Junior High School in Roosevelt, Utah, and their teachers, were given a talk on nature and refuge operations, and given a tour of the Leota development.

On September 30, twelve pupils and teachers from the New Life Training Center in Vernal were given a refuge talk and tour. by Maintenceman Littleton.

In July refuge personnel assisted Utah Water and Power employees in making a general vegetative and water-use map of the refuge and surrounding areas.

Uintah County Commissioners were presented with a check for \$3,359.91 under the Refuge Revenue Sharing Act.

D. Hunting.

This is the third year that portions of the refuge have been open to deer hunting, and the first year for pheasant hunting.

The archery hunt lasted from August 26 to September 10, with bowmen spending about 200 hours on the refuge looking for deer. They saw plenty of deer, but only one hunter scored - Rex Curry of Ft. Duchesne taking a three-point buck in lower Leota. Rex was also the only hunter to take a deer with a bow and arrow last year. Most hunting time was spent in Sheppard Bottom along the river.

The regular deer season was October 21-31, and the entire refuge (with the exception of Leota) was open to the taking of either sex. Deer were not plentiful, as in past seasons, as hot summer weather and insects had pushed them back away from the river. Approximately 30 deer were taken with the rifle and only one-third of them were bucks.

Pheasant season, November 4-19, resulted in a harvesting of approximately 175 refuge roosters. Almost all hunting was in and around the Sheppard Bottom fields. Only two birds were known to be taken across the river in Wyasket. Opening morning saw shooting like "the good old days," except for the crowded conditions. The fat, unwary birds must have thought, "Here come those crazy deer hunters again!" as 75 hunters and 30 dogs collected for the 8:00 a.m. opening. By 8:01 they began to suspect something was wrong; by 8:30 they were sadly disillusioned with the human race (like many humans). Most of the hunters were crowded into less than 100 acres in and around the grain. For thirty minutes the pace was fast and furious as the 400-500 birds decided they wanted to be elsewhere. Opening day saw 110 birds taken, most of them in that first half hour. Many hunters were peppered with shot and others told tales of near accidents. With the crowded conditions and in the heated excitement of that opening morning, it is a wonder that no one was hurt. This did not seem to dampen enthusiasm for the hunt, however. A checking station was manned in Sheppard Bottom for the hunt and most comments received were favorable. Most hunters were from the local area, but a number came from Salt Lake City and other western Utah towns. After opening day, only good hunters with good dogs got their limit of three birds, as the cocks stayed on the ground and were hard to flush from the dense cover.

E. Violations.

No citations were issued.

F. Safety.

Four safety meetings were held during the year. Employees discussed the refuge work programs from the safety standpoint, trying to foresee hazards and correct or avoid them before they caused accidents. There were no lost time accidents in 1967.

VII. OTHER ITEMS

A. Items of Interest.

On March 16, Maintenceman Lewis A. Littleton was hospitalized with a "heart attack," presumably caused by a clot or bubble passing through the heart valves. There was no damage and Lew was back to work on the 20th!

Lo, and behold, a Miracle at Ouray! On August 27, our Clerk, Norma Richardson, married Mr. L. R. Miracle of Vernal. Again, congratulations, Norma.

Many thanks to Manager Johnson and Maintenceman Littleton for their suggestions and editorial assistance. Clerk Norma Miracle assisted in the gathering of information and did the typing. Apologies from the Assistant for the lateness of the report.

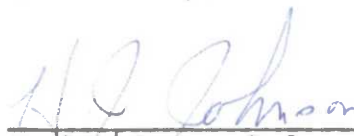
B. Photographs.
Photographs follow.

C. Signature.

Prepared by:

CLYDE E. NICELY
Assistant Refuge Manager

Submitted by:


H. J. Johnson, Refuge Manager

Reviewed by:


Assistant Regional Director-Operations

Date: APR 23 1968

Reviewed by:

Date: _____



No, they're not walking on water, that's ice, Man! This year swans, numbering as high as 100, used the Leota units for two months -- a total of 3,402 use-days. The big birds left only when the ice closed over and forced them out. Coots on the water, ducks in the air.



Honkers noisily landing in grain stubble in the Sheppard farm fields. Corn can be seen in the background. These birds, at year's end 300 Canada Geese and 4,000 Mallards, find water in open leads in the river ice.



A few of the 10,000 ducks, mostly Mallards, that were feeding in the Sheppard grain fields when this picture was taken. These birds are not just on "welfare," it is hoped that the abundant food will serve to entice them to stay and nest.



An aerial view of Sheppard Bottom, showing the headquarters area and the farm fields. The service building and two residences can be seen at the lower right. The three farthest fields are in corn, the rest in small grains and pasture.



Using the 4-wheel drive Pickup to harrow the dikes after they were seeded with grasses and clover. Note the gravel on the dike top!



The high pressure, 2½ inch pump used in sprinkling the dikes. The gasoline powered unit was picked up from surplus by Bear River Refuge and transferred to Ouray. The flexible intake hose can just been seen on the opposite side of the pump.



The pump in action. It easily handled fifteen sprinkler heads. Each "set" required about an hour's pumping to properly soak the dike. The trailer with the long tongue was hooked behind the pump to carry the 40-foot joints of sprinkler pipe when moving.



Leota Bottom, looking at Unit 4 in the center foreground. Ways were sought to break up the surrounding land area with water, to make it more attractive for nesting, and so - - - -



A single hole shot in Unit L-4. A completed pothole is seen just over the hat, and another higher still is seen as a dark line.



A nine-hole "doughnut" blast in L-4. This type of shot left a large pothole with an "island" in the center.



Unit L-4 after pothole blasting was completed and the holes filled. Here the water level in the unit is higher than it would be during a nesting season.



Close-ups of Unit L-4 potholes. This more closely shows the variation in size and the configurations of the "doughnuts."



In the spring, flood waters in the Green River threatened portions of the Leota development. The refuge D-6 was used to raise the height of the river protective dike in several places. The Gulf water pump shelters can be seen across the river.



Here a refuge grader is being used to spread asphalt in a low water crossing or "dip" in the Leota road. Two of these dips were paved.



The Leota pump structure as it started to deteriorate. If the ice takes it out next spring, Leota could be without water.



Maintenanceman Littleton setting fire to a mound of debris removed during two pumping seasons from the sump of the Leota pump. The sticks, leaves, etc. are drawn in from the river, blocking off the pump screens if not cleaned out daily.



The roto-cutter mower being used to mow weeds on the Leota dikes in the fall. The dual wheels help keep the tractor from sinking in soft spots. The large aluminum shield is necessary to protect the operator from rocks, etc. kicked up by the blade.



This is the big one that didn't get away. This fat, sleek fellow had a 32-inch spread and was one of the few big bucks taken this year.

WATERFOWL

REFUGE Ouray National Wildlife Refuge

MONTHS OF January TO May, 19 67

[illegible]

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)REFUGE Osage National Wildlife RefugeMONTHS OF January TO May, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	3/12-18:	3/19-25	3/26-4/1:	4/2-8	4/9-15	4/16-22	4/23-29:			
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	210	213	75	75	75	70	72		18,970	
Cackling										
Brant										
White-fronted									7	
Snow										
Blue										
Other										
Ducks:										
Mallard	3,502	6,552	942	612	273	231	255		167,119	
Black										
Gadwall	250	300	125	240	200	131	215		10,727	
Baldpate	206	226	6	64	10	4	28		4,010	
Pintail	2,000	2,400	510	448	767	276	86		47,336	
Green-winged teal	50	60	50	178	230	156	205		7,305	
Blue-winged teal	40	50	35	90	40	74	95		3,010	
Cinnamon teal	30	40		36	62	113	70		2,457	
Shoveler	30	40	211	332	410	352	420		12,621	
Wood										
Redhead	100	135	138	290	60	30	36		5,605	
Ring-necked	10	12	35	36	50	10	31		1,788	
Canvasback					1				7	
Scaup			175	345	245	204	95		7,448	
Goldeneye		1				10	31		294	
Bufflehead	30	40	195	211	270	270	215		8,677	
Ruddy						4			28	
Other		9856								
American Merganser									67	
Coot:		400	400	1,410	2,190	2,020	1,360		54,460	
				(over)						

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans				Principal feeding areas <u>Leota Bottom Units, farm</u>
Geese	<u>18,977</u>	<u>310</u>		<u>fields in Sheppard bottom.</u>
Ducks	<u>257,505</u>	<u>9,856</u>		Principal nesting areas <u>Leota and Sheppard Bottoms.</u>
Coots	<u>54,460</u>	<u>2,190</u>		
				Reported by <u>Clyde E. Nicely</u>
				<u>Clyde E. Nicely, Assistant Refuge Manager</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Aug. 1952)MIGRATORY BIRDS
(Other than Waterfowl)Refuge Curay MNRMonths of January to May, 19 67

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh</u> <u>Birds:</u>										
Pied Billed Grebe	1	4/6								
Bared Grebe	1	3/23	316	4/23-29	Still present					
Western Grebe	6	4/14	6	4/9-15	Still present					
Great Blue Heron	2	3/23	8	4/23-29	Still present					
Snowy Egret	2	4/21	17	4/23-29	Still present					
Black-crowned Heron	10	4/21	10	4/23-29	Still present					
Glossy Ibis	7	4/6	23	4/23-29	Still present					
Sandhill Crane	200	3/21	250	3/19-25	250	3/25				
II. <u>Shorebirds,</u> <u>Gulls and</u> <u>Terns:</u>										
Killdeer	10	3/9	75	4/16-29	Still present					
Long-billed Curlew	2	4/21	2	4/16-29	Still present					
Sandpiper	3	4/6	125	4/23-29	Still present					
Western Willet	6	4/21	6	4/16-22	Still present					
Yellow-legs	1	3/30	2	4/2-8	Still present					
Dowitcher	15	3/23	66	4/16-29	Still present					
Marbled Godwit	2	4/21	10	4/23-29	Still present					
Avocet	4	4/6	8	4/16-22	Still present					
Black-necked Stilt	6	4/21	6	4/16-22	Still present					
Phalarope	135	4/27	135	4/23-29	Still present					
California Gull	8	3/30	11	4/23-29	Still present					
Ring-billed Gull	13	4/27	13	4/23-29	Still present					
Franklin's Gull	33	4/27	33	4/23-29	Still present					
Forster's Tern	2	4/21	2	4/16-22	Still present					
(over)										

(1)	(2)		(3)		(4)	(5)		(6)
III. <u>Doves and Pigeons:</u>								
Mourning dove	2	4/23	200	4/23-29	Still present			
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle	1	1/11	6	3/2-8	Still present			
Duck hawk								
Horned owl	1	3/16	2	4/23-29	Still present			
Magpie	20	1/17	200	4/23-29	Still present			
Raven								
Crow								
Bald Eagle	1	1/11	6	2/24-27	Still present			
Red-tailed Hawk	3	2/28	10	4/16-29	Still present			
A. Rough-legged Hawk	1	2/16	4	4/2-8	Still present			
Marsh Hawk	1	3/12	6	4/23-29	Still present			
Sparrow Hawk	2	3/12	14	4/23-29	Still present			
						Clyde E. Nicely		
						Reported by Clyde E. Nicely, Asst. Refuge Mgr.		

- INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)
- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

(April 1946)

UPLAND GAME BIRDS

Refuge **Ouray National Wildlife Refuge**

Months of **January** to **May** , 19**67**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total		Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Tree-brush complex river islands; agriculture bottom- lands, 3750 acres	4.6							800	
No other upland game birds observed this period.										

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Ozark National Wildlife Refuge Year ending April 30, 1967

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control*	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
								Permit Number	Trappers Share	Refuge Share				
Badger														
Striped Skunk														
White-tailed Jackrabbit														
Black-tailed Jackrabbit														
Desert Cottontail														
Coyote														
Bobcat														
White-tailed Prairie Dog														
Beaver														
Muskrat														
Raccoon														

*List removals by Predator Animal Hunter

*List removals by Predator Animal Hunter

REMARKS:

No large populations of any of these animals.

Reported by Clyde E. Niche

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i.e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

W A T E R F O W L

REFUGE Ouray MWR

MONTHS OF May 1 TO August 31, 1967

(1) Species	(2) Weeks of reporting period									
	4/30-5/6	5/7-13	5/14-20	5/21-27	5/28-6/3	6/4-10	6/11-17	6/18-24	6/25-7/1	7/2-7/8
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	85	54	82	59	41	26		10		10
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	260	288	756	439	251	12	45	60	83	129
Black										
Gadwall	290	126	184	192	149	121	193	190	222	115
Baldpate	50		26		10	16	56	96	110	145
Pintail	171	172	204	78	99	22	46	149	82	85
Green-winged teal	60		139	205	90	2			26	45
Blue-winged teal	81	144	1	91	31	17		6	2	30
Cinnamon teal	81	12	86	43	18	12	12	4	30	
Shoveler	325	112	395	242	168	19	61	59	60	45
Wood										
Redhead	31	12	62	32	18	14	29	140	81	130
Ring-necked	32		16							5
Canvasback				2						
Scaup	105	136	36	30	6	10	2	2	6	
Goldeneye										
Bufflehead	85	40	20	10						
Ruddy			5	12	3	2	5		16	
Other										
Coot:	1,500	1,230	1,030	941	470	485	370	565	410	210

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)REFUGE Ouray NWRMONTHS OF May 1 TO August 31, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	7/9-15 : 11	7/16-22 : 12	7/23-29 : 13	7/30-8/5 : 14	8/6-12 : 15	8/13-19 : 16	8/20-26 : 17	8/27-9/2 : 18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	10	110	140	150	180	185	250	430	12,754	9	70
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	140	200	220	255	355	340	1,685	2,400	55,566	7	80
Black											
Gadwall	120	130	145	125	70	83	50	1,300	26,355	14	150
Baldpate	170	45	45	45	40	40	40		6,538		
Pintail	80	40	17	50	300	374	3,215	1,000	43,288	8	60
Green-winged teal	35	10		25	50	55	537	200	7,945	2	15
Blue-winged teal	40	10		25	50	75	23	250	6,132	6	50
Cinnamon teal					5		2		2,135		
Shoveler	50	85	90	50	30	30	45		13,062	4	40
Wood											
Redhead	100		1	10					4,620		
Ring-necked									371		
Canvasback									14		
Scaup									2,331		
Goldeneye											
Bufflehead			1						1,092		
Ruddy		20	20	10	10	2			735	1	5
Other											
Coot:	200	150	160	150	150	165	275	640	63,287	20	150
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	0	0	0	Principal feeding areas <u>Leota, Sheppard Bottoms.</u>
Geese	12,754	430	70	
Ducks	170,184	5,597	400	Principal nesting areas <u>Leota, Sheppard and Wood Bottoms.</u>
Coots	63,287	1,500	150	
				Reported by <u>Clyde E. Nicely</u> Clyde E. Nicely, Assistant Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Aug. 1952)MIGRATORY BIRDS
(Other than Waterfowl)Refuge Ouray NWR Months of May 1 to August 31, 19 67

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>											
Hared Grebe		355	5/4	450	5/7-13	200	8/31	2	20	100	
Western Grebe		10	5/11	10	5/7-13	5	7/13				
Pied-billed Grebe		28	5/4	28	4/30-5/6	3	8/24				
Great Blue Heron		6	5/4	35	8/6-12	20	8/31				
Snowy Egret		19	5/4	35	5/7-13	1	6/29				
Black-crowned Heron		1	5/4	30	8/27-9/2	30	8/31				
Glossy Ibis		10	5/4	19	5/14-20	12	8/31				
American Bittern		1	5/4	3	6/25-7/1	2	7/6				
II. <u>Shorebirds, Gulls and Terns:</u>											
Killdeer		75	5/4	75	4/30-5/6	20	8/17		50*	150*	
Long-billed Curlew		2	5/4	2	4/30-5/13	2	5/11				
Sandpiper		10	8/24	10	8/20-26	10	8/24				
Western Willet		2	5/4	10	8/6-12	4	8/17				
Avocet		22	5/4	71	5/14-20	3	8/17		30*	60*	
Dowitcher		95	5/4	272	5/7-13	150	8/24				
Marbled Godwit		12	5/4	12	4/30-5/6	1	7/27				
Black-necked Stilt		12	5/11	31	8/20-26	31	8/24				
Phalarope		580	5/4	580	4/30-5/6	128	8/24				
California Gull		5	5/18	5	5/14-20	5	5/18				
Ring-billed Gull		4	5/18	4	5/14-20	4	5/18				
Bonaparte's Gull		10	5/4	10	4/30-5/6	1	5/18				
Franklin's Gull		4	5/4	4	4/30-5/6	4	5/4				
Forster's Tern		5	5/4	40	5/14-20	40	5/18				
Black Tern		36	5/18	36	5/14-20	10	6/29				
Black-bellied Plover		10	5/11	10	5/14-20	10	5/11				
*Estimated						(over)					

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	200	5/4	4,000	8/31	Still present				
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl	2	5/4	4	6/20-26	Still present				
Magpie	200	5/4	200	4/30-5/6	Still present				
Raven									
Crow									
Red-tailed Hawk	2	5/4	4	5/14-20	2	8/24			
Marsh Hawk	6	5/4	10	8/20-26	Still present				
Sparrow Hawk	14	5/4	20	8/20-26	Still present				
Osprey	1	6/29	1	6/29	1	8/29			
Reported by <u>Clyde E. Nicely</u>									

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual) **Refuge Manager**

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ouray NWR For 12-month period ending August 31, 1967

Reported by Clyde E. Nicely Title Assistant Refuge Manager
Clyde E. Nicely

(1)	(2)	(3)	(4)	(5)
Area or Unit	Habitat		Breeding	
Designation	Type Acreage	Use-days	Population	Production
Leota Bottom	Crops	Ducks	250	370
	Upland	Geese	12	35
	Marsh	Swans	0	0
	Water	Coots	200	150
	Total	Total	462	555
Sheppard Bottom	Crops	Ducks	0	0
	Upland	Geese	28	25
	Marsh	Swans	0	0
	Water	Coots	0	0
	Total	Total	28	25
Wyasket Bottom	Crops	Ducks	0	0
	Upland	Geese	0	0
	Marsh	Swans	0	0
	Water	Coots	0	0
	Total	Total	0	0
Wood Bottom	Crops	Ducks	20	30
	Upland	Geese	6	10
	Marsh	Swans	0	0
	Water	Coots	0	0
	Total	Total	26	40
Johnson Bottom	Crops	Ducks	0	0
	Upland	Geese	0	0
	Marsh	Swans	0	0
	Water	Coots	0	0
	Total	Total	0	0
Brennan Bottom	Crops	Ducks	0	0
	Upland	Geese	0	0
	Marsh	Swans	0	0
	Water	Coots	0	0
	Total	Total	0	0
Refuge Total:	Crops	Ducks	270	400
	Upland	Geese	46	70
	Marsh	Swans	0	0
	Water	Coots	200	150
	Total	Total	516	620

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Ourey MNR

Months of May 1 to August 31, 1967

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total		Hunting	For Re- stocking	For Research		
					Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Tree-brush complex; river islands; agri- cultural lands, 3,720 acres.	3.0		418					1,218	Production figures from Pheasant Crow Count data.
Chukar Partridge	Benchland brush; rocky escarpments.			Not seen						
Sage Grouse	Benchland brush.			Not seen						
Gambel's Quail	Tree-brush complex; benchland brush.			Not seen.						

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

W A T E R F O W L

REFUGE Ouray

MONTHS OF September 1 TO December 31, 1967

(1) Species	(2) Weeks of reporting period									
	9/3-9 1	9/10-16 2	9/17-23 3	9/24-30 4	10/1-7 5	10/8-14 6	10/15-21 7	10/22-28 8	10/29-11/4 9	11/5-11 10
Swans:										
Whistling							5	27	100	100
Trumpeter										
Geese:										
Canada	375	400	450	450	325	320		380	340	374
Cackling										
Brant										
White-fronted										
Snow								5		
Blue										
Other										
Ducks:										
Mallard	705	3155	4510	4175	1725	2025	1115	365	1400	3145
Black										
Gadwall	310	55	430	500	490	575	945	1230	1450	1565
Baldpate	100	100	225	275	335	440	330	420	400	420
Pintail	305	797	1535	870	825	985	785	855	1200	1425
Green-winged teal	20	120	350	200	150	55		100	75	40
Blue-winged teal	162	110	150	130	115					
Cinnamon teal										
Shoveler	36	50	20	35	30	36	20	245	120	90
Wood										
Redhead	31	83	155	200	155	120	205	110	75	50
Ring-necked		15	50	35	30	20	30	21	10	11
Canvasback									120	121
Scaup					20	10	20	6	80	80
Goldeneye										
Bufflehead						2	50	205	250	283
Ruddy	47	25	25	30	50	50	70	90	85	
Other										
Coot:	1369	2330	2575	2675	2700	2760	2860	2805	1700	1720

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)REFUGE OurayMONTHS OF September 1, TO December 31, 19 67

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11/12-18	11/19-25	11/26-12/2	12/3-9	12/10-16	12/17-23	12/24-30				
Swans:	92	61	68	33					3,402		
Whistling											
Trumpeter											
Geese:	365	370	425	455	525	543	297		44,758		
Canada											
Cackling											
Brant											
White-fronted		2							14		
Snow	3	3							77		
Blue		1				4			35		
Other											
Ducks:	4810	3850	5015	10,000	10,000	10,000	4000		489,965		
Mallard											
Black											
Gadwall	1460	1015	20						70,315		
Baldpate	550	1025	110						32,760		
Pintail	1400	440	30						80,164		
Green-winged teal	40	10	10						8,190		
Blue-winged teal									4,669		
Cinnamon teal											
Shoveler	90	70	23						6,055		
Wood											
Redhead	40		15						8,673		
Ring-necked	70	130	355						5,439		
Canvasback	100	80	66						3,409		
Scaup	235	500							6,657		
Goldeneye			1						7		
Bufflehead	340	405	20						10,885		
Ruddy		20							3,444		
Other											
Coot:	1500	1580	405	40					189,133		
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	3,402	100	
Geese	44,884	525	
Ducks	730,672	10,000	
Coots	189,133	2,860	

SUMMARY

Principal feeding areas Leota and Sheppard Bottoms.

Principal nesting areas Leota, Sheppard and Wood Bottoms.

Reported by *H. J. Johnson*
 Refuge Manager, for Clyde E. Nicely, Assistant
 Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual).

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

(Aug. 1952)

(Other than Waterfowl)

to December 31

1967

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>										
Eared Grebe	141	9/1	300	9/24-30	15	11/30				
Western Grebe	3	10/5	3	10/1-4	3	10/14				
Pied-billed Grebe	50	9/3	50	9/3-7	10	10/19				
Great Blue Heron	10	9/3	10	9/3-7	3	11/30				
Black-crowned Heron	12	9/3	15	9/17-30	15	9/30				
Glossy Ibis	18	9/3	18	9/3-9	1	9/23				
Sandhill Crane	100	10/13	100	10/13	100	10/13				
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	30	9/3	30	9/3-9	1	12/21				
Sandpiper	25	9/3	25	9/3-9	25	9/9				
Western Willet	2	9/3	20	10/1-14	20	10/14				
Yellowlegs	12	9/3	12	9/3-9	12	9/9				
Phalarope	40	9/3	110	9/10-16	1	10/16				
Ring-billed Gull	5	10/13	5	10/8-14	5	10/14				
(over)										

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons: Mourning dove White-winged dove	4000	9/1			
IV. Predaceous Birds: Golden eagle Duck hawk Horned owl Magpie Raven Crow					
Reported by <i>H. Johnson</i>					

INSTRUCTIONS

(See Sec. 7532, Wildlife Refuges Field Manual)
Refuge Manager, For Clyde E. Nicely, Asst.

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Orray

Months of September 1 to December 31, 1967

(1) Species	(2) Density	Acres per Bird	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat		Number broods obs 'v' d. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Tree-brush complex; river islands; agricultural lands, 3,720 acres.	4.0			175	1,000	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Ouray Calendar Year 1967

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At Period of Greatest Use	As of Dec. 31	
Common Name	Cover Types, Total Acreage of Habitat	Number												
Mule Deer	Can be found over entire refuge, 13,000 acres.	30	30									150	40	

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed date may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755

Form NR-5

60701

DISEASE

Refuge Ouray Year 1967Botulism NoneLead Poisoning or other Disease None

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge OurayCalendar Year 1967

1. Visits

a. Hunting 555 b. Fishing 50 c. Miscellaneous 286 d. TOTAL VISITS 891

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game	315	10,500	Refuge
Big Game	140	10,500	Refuge
Other			

Number of permanent blinds -Man-days of bow hunting included above 40Estimated man-days of hunting on lands adjacent to
refuge -

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

Recreation 136 Official 50
Economic Use 50 Industrial 50

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools	2	72		
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.	6	30		
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	1
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge Ouray Year 19 67

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Bulrush (<u>Scirpus</u> sp.)							Leota Units	One bunch of plants every 10 feet in two al- ternating rows.	3600 yds. of shore- line.	Mature plants dug up with roots attached.	July	Good	

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: The bulrush was dug by hand in Unit 7 and
transplanted along dikes in Leota.

Fish and wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ouray County Uintah State Utah

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
*Fall Wheat			1	65 bu.	35.5	2310 bu.	36.5		
Barley			16	480 bu.			16.0		
Oats			12	420 bu.			12.0		
Millet					4	80 bu.	4.0		
Fall Wheat					20.0		20.0	20.0 Green Browse	
Pasture (The barley and millet fields were overseeded w/grass and clover.)								20 acres green browse	
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 1 Haying Operations 1 Grazing Operations 3

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	26.0	12	171.60	1. Cattle	275	675	\$222.75	8,985
				2. Other				
				1. Total Refuge Acreage Under Cultivation				107
Hay - Wild				2. Acreage Cultivated as Service Operation				85

* Planted in 1966.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Ouray RefugeMonths of January through December, 1967

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Fall Wheat	250 bu.		250 bu.					250 bu.		250 bu.	
Fall Wheat (Gaines)	0	65 bu.	65 bu.		65 bu.		65 bu.	0			
BT Park Oats	0	700 lb.	700 lb.		700 lb.		700 lb.	0			
White Proso Millet	0	100 lb.	100 lb.		100 lb.		100 lb.	0			
544 Hybrid Corn	0	350 lb.	350 lb.		350 lb.		350 lb.	0			

(8) Indicate shipping or collection points _____

(9) Grain is stored at Granary - Refuge headquarters.

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

TIMBER REMOVAL

Refuge.....Ouray..... Year ~~195~~ 1967

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Anderson, Ivan	36514, Amended, 2 amendments.	Leota, Sheppard, Wyasket and Wood Bottoms	1,000 approx.	458,000 B.F.	1.00 per 1,000	\$458.00	Everything above 6" DBH to be felled.	Cottonwood
REMARKS: This timber was scaled and the number of units determined in advance of cutting. Full payment was received in February, 1964. Permittee cleared Leota Bottom and part of Sheppard Bottom in 1964-65. This year he cut in Sheppard Bottom and on an island in the Green River off Wyasket Bottom.								

Total acreage cut over..... Total income.....

No. of units removed B. F. Method of slash disposal.....

Cords.....

Ties.....

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	None.							

10. Summary of results (continue on reverse side, if necessary)